REMARKS

Favorable reconsideration and allowance of the present application are respectfully requested in view of the foregoing amendments and the following remarks. Applicants do not believe the presently proposed amendments raise any new issues for further examination, and respectfully request the entry of the proposed amendments.

Applicants and their representative would like to thank Examiner Haddad for the time and courtesy he extended during a telephone interview with the Applicants' representative. During the interview, the Examiner stated that, while depending upon the specific nature of the presented amendments, he believed he would be able to enter certain narrowing amendments to the claims. The final rejection of the claims and possible amendments thereto were discussed during the course of the interview, though no final agreement was reached as to the allowability of the claims.

Currently, claims 15, 46, and 57-60 are pending in the present application, including independent claims 15, 57, and 59. Independent claim 15, for instance, is directed to a fused or chimeric polypeptide that consists essentially of a first component chemically bound to a second component. The first component is the G3 subdomain of the laminin-5 α3 chain, and the second component is the selected species, interleukin-2. Accordingly, all generic claims and claims directed to previously withdrawn species have been cancelled. The cancellation of these claims should not be considered to reflect any belief of the Applicants as to the patentability of the cancelled claims, however, and Applicant reserves the right to reassert these claims in a continuation application filed under 37 U.S.C. §1.53(b).

In the Office Action, claims 48-49, 51-52, and 54-55 were rejected under 35 U.S. C. §112, second paragraph as being indefinite. Although Applicants respectfully disagree with this finding, these claims have been cancelled in an effort to further prosecution of the application.

In the Office Action, the claims were rejected under 35 U.S.C. §112, first paragraph. Specifically, the claims were rejected as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention.

The presently pending claims are directed to fused or chimeric polypeptides that include two components. The first component can be either the G3 subdomain (claim 15), the G1 to G3 subdomain (claim 57) or the entire globular domain (claim 59) of the laminin-5 α3 chain. All of these claimed first components include the G3 subdomain of the laminin-5 α3 chain. In the example section of the application, polypeptides including the G3 subdomain of the laminin-5 α3 chain were shown to adhere to a pathogen. In particular, the recombinant rat laminin-5 α3 chain G3 domain protein (SEQ ID NO:6) was shown to adhere to MDA-MB-435 breast cancer cells. Moreover, adherence of the polypeptides to the pathogenic breast cancer cells was shown to lead to the destruction of the pathogens. Accordingly, Applicants respectfully submit that the claims, at least in regard to the first component, are enabled as to both how to make the polypeptide and a use of the polypeptide, i.e., inhibition of the pathogenic breast cancer cells.

The claimed polypeptides are not limited to merely this first component, however. The claimed polypeptides also include a second component chemically bound to the first component. The second component of the presently claimed polypeptides is interleukin-2. In the Office Action, it was stated that it is within the knowledge of those skilled in the art to make such a fusion polypeptide. Hence the Applicants understand that the making of the presently claimed fusion or chimeric polypeptides is not the issue of the rejections. Rather, Applicants understand that at issue is the question of whether the claimed subject matter was described in the specification in such a way as to enable one skilled in the art to which it pertains to use the claimed invention.

As described in the application (see, for example, paragraph 59), the recognition and binding of the polypeptides to the integrin receptor-containing materials can be utilized as a method for delivering the second component directly to a pathogen. Hence, one particular use of the claimed polypeptides is to utilize the capability described in the example section for binding the polypeptides to a pathogen to deliver the second component (the interleukin-2), directly to the pathogen (the breast cancer cell). This binding capability has been clearly described in the application, for instance, in the example section.

While the presently pending claims are not directed to any one use for the claimed fused or chimeric polypeptides, one exemplary use thereof that is described in the specification is an *in vivo* use. In the Office Action, a publication was cited as teaching the lack of *in vivo* binding between $\alpha 6\beta 1$ integrin receptors as are found on platelets, lymphocytes, monocytes, thymocytes and epithelieal cells and laminin-5. The cited publication, U.S. Published Patent Application 2002/0058336, states in a single line of the application that the $\alpha 6\beta 1$ integrin receptor as found on these particular cells is a receptor for laminin-5, but not *in vivo*. There are several research articles in the literature, however, that do support the *in vivo* association of $\alpha 6$ integrin with laminin-5, and particularly with its $\alpha 3$ chain. Specific examples of such articles have been previously cited and include Ryan, et al. (1996), Pulkkinen, et al. (1997), Ryan, et al. (1999), and Nguyen, et al. (2000), which are further supported by data summarized in review articles (see, e.g., Jones, et al., 1998; Borradori and Sonnenberg, 1999). As such, Applicants respectfully maintain that those of ordinary skill in the art would expect that the *in vitro* binding shown in the example section of the application would successfully correlate to a similar binding *in vivo* and therefore Applicants further maintain that the teachings of the disclosure would in fact support an *in vivo* binding of the claimed polypeptides, particularly in an embodiment in which the polypeptide is bound to a high expressing cell, such as a pathogenic cancer cell.

Accordingly, Applicants maintain that the making and use of the disclosed chimeric or fusion polypeptides is suitably described in the specification as the first component can be utilized for the inhibition of the targeted cell as well as to bind the second component to the cell that includes either $\alpha 6\beta 1$ or $\alpha 6\beta 4$ integrin receptors at the cell surface. Moreover, Applicants respectfully submit that one of ordinary skill in the art would understand how to effectively use the claimed polypeptides as pertains to the indirect binding of the second component, the interleukin-2, to the targeted cells. Specifically, the first component of the claimed polypeptides has been successfully shown to bind a targeted pathogen *in vitro* in the example section of the specification, and it would be expected that these polypeptides would also bind similar materials *in vivo*, based upon the level of knowledge in the art as exemplified by the representative

articles mentioned above. Accordingly, Applicants respectfully maintain that the system can be utilized in one embodiment to provide for the indirect binding of interleukin-2 to targeted cells *in vivo*.

The capability of indirectly binding interleukin-2 to a target, and specifically to a pathogenic target such as those described in the specification, would present obvious use to one of ordinary skill in the art. For instance, when considering an *in vivo* use, the increased presence of interleukin-2 at the targeted binding site can increase immunoprotection at the site. As is known in the art, interleukin-2 stimulates growth and differentiation of T-cell response. Administration of IL-2 *in vivo* results in expansion of lymphoid cells. Specifically, IL-2 enhances the ability of the immune system. Nevertheless its clinical application is often limited due to cytotoxicity concerns. Accordingly, one use for the claimed polypeptides would be targeted delivery of interleukin-2 to particular cell-types, i.e., those including the integrin receptors that specifically bind the first component of the polypeptide. Thus, localized enhancement of the immune system could be attained in an *in vivo* use, due to the increased presence of the interleukin-2, and unnecessary levels of cytotoxicity of the treatment could simultaneously be avoided, due to the indirect binding of the interleukin-2 at the targeted site.

Applicants respectfully maintain that the presently pending claims comply with the requirements of 35 U.S.C. 12, second paragraph. In particular, Applicants maintain that given the specification of the pending application, one of ordinary skill in the art would be enabled to make and use the inventions as encompassed in the pending claims without an undue amount of experimentation.

It is believed that the present application is in complete condition for allowance and favorable action, is therefore requested. Examiner Haddad is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Amendment.

Please charge any additional fees required by this Response to Deposit Account No. 04-1403.

Respectfully submitted,

DORITY & MANNING, P.A.

3/27/06 BY: _____

Christina L. Mangelsen, Patent Agent
Registration No. 50,244
DORITY & MANNING, P.A.
P.O. Box 1449
Greenville, SC 29602-1449
(864) 271-1592